

who is a patient in a hospital supported by charity, by voluntary contributions, or by public funds. Sickness or disablement benefit is not payable for accidents or industrial diseases covered by the Workmen's Compensation Act. Out of these classifications arise no end of complexities which place a heavy burden of time and thought on the attending physician. The rules and regulations governing the system are numerous and burdensome.

SOME DANGERS AND DEFICIENCIES OF PANEL PRACTICE

In actual practice, it is true, the system has worked out better than was anticipated. The prosecutions for failure to conform to state requirements, or rules and regulations, are relatively few. On the other hand, the subserviency of the physician to the system hides many defects and deficiencies. The administration of the system by approved societies, to the extent of paying of benefits, makes the latter an impressive body with authority over physicians' activities. The latter being confronted by the duty of certifying sickness, most naturally adopt a course of easy acquiescence to avoid constant conflicts with the clients on his panel. The approved society is one of several bodies the doctor has to deal with, the national health insurance act having created about two hundred insurance committees in England, Scotland, and Wales to administer medical benefits with regard to certain features of local administration. These committees distribute the money sent by the Ministry of Health to the doctors in their areas in accordance with the number of persons on the list of each panel physician. The insurance collections are pooled for the entire country, and the pool is divided according to districts on the basis of the number of insured persons in each district. The amount assigned to each district, divided by the total number of insured persons in the area, sets the capitation fee, which has varied from time to time. The present capitation fee is nine shillings per insured person per year. But the compensation has been reduced to eight shillings for the time being and hope for restoration of the cut is very doubtful. According to the Supplement to the *British Medical Journal* of January 14, 1933, "The reduction of the capitation fee fifteen months ago, accepted by the Insurance Acts Committee, was met by insurance practitioners with a good deal of criticism in the correspondence columns of the Supplement in the last quarter of 1931. This criticism still continues."

The panel physician is no longer free or independent. He is for all practical purposes an employee of the state, and sooner or later there is a reasonable certainty that a state medical service will be established to replace the present highly involved and costly administration of national health insurance. But once such a system comes into operation, it is practically hopeless to anticipate a return to the earlier status of a free and independent medical service.

(To be continued)

THE LURE OF MEDICAL HISTORY*

PHYSICAL MEDICINE—SOME HISTORICAL FACTS AND FIGURES†

By HAROLD M. F. BEHNEMAN, M. D.
San Francisco

JUST as our own life began in the generations preceding this, so did modern medicine. As one candle is lit from another, each generation, each century of medicine progresses in the conquest of disease and the preservation of health.

If we pause briefly, in retrospect, we realize that physical medicine, which is constantly knocking at the door of modern therapy, is no youngster but a very wise old man. Let us review some old familiar names, and perhaps some that are strange to us; let us see some pictures long forgotten as they have hung in the corridors of time—pioneers, prophets and martyrs in a field of therapy whose origin was with Creation.

Progress in medicine, unlike that in other sciences, has rested upon the shoulders of a few strong men in each generation; the mass of men have been a detriment rather than an aid. We move ahead so furiously fast, we have been so necessarily engrossed in the maze of laboratory sciences since the discovery of bacterial etiology of disease, that we are very apt to underestimate and discard our age-old methods of treatment, and so easily lose our memory of those pillars in the foundation of rational medicine. To the student of medical history this will be but a review; to a busy practitioner, I hope it may bring at least a glimpse of the history back of the oldest form of treatment known to man.

USE OF HEAT AND LIGHT

Ancient inscriptions of all sorts indicate that folkways of early medicine, regardless of their origin, have been the same. The use of heat dates back to remote antiquity. Even animals lie in the sun when ill. Massage was long known and practiced by the Indians, Chinese, Japanese, Hindus, and Malays; the manuscript, "Kong Fao" (3000 B. C.) contains accounts of various methods used. The Indian used the hot spring, the vapor bath, and cold plunge. The Ganges and the Nile are frequently referred to in history as the bathing places of ancient man. The Persians, Egyptians, and Phoenicians knew of massage, which was probably imported into Melanesia by Polynesian castaways, as their massage was truly rational and effective. The Indian's "Turkish" bath was the geyser, the warm spring and the sweat-oven. Let us consider these various forms of physical medicine separately; first, that of heliotherapy.

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†From the department of medicine, University of California.

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In Heliopolis, the Egyptian city of the sun, there were temples which served as centers of medical activity. Between 3000 and 1000 B. C. a distinctive culture was carried, by navigation and trade, from Egypt to the Mediterranean; and after the latter date by Phoenicians to India, to Melanesia, and to America. This culture had as its foundation the worship of the sun. Aesculapius, the son of Apollo and the god of medicine, became an immortal object of worship. The temples of his cult were like the health resorts of modern times.

Asclepiades depended upon light in conjunction with baths. Hippocrates was the first physician to use sun treatment. The Incas of Peru erected elaborate temples to the sun, which also held a superior place in the theocratical college of Ancient Egypt. The ancient Persians venerated the orb of day. Pliny said: "The sun is the greatest curative agent." The ancient Greeks exposed their ailing to its rays: Hippocrates, Celsus, and Galen supported its use. Aristotle said that the sun produced the green of vegetable matter. The Greeks worshiped Helios and Apollo, the Egyptians their Ra, the Israelites and Philistines their Baal, the Persians their Mithra, and the Germans their eye of Wotan. All through primitive and ancient medicine, we find papyri, manuscripts and friezes, as well as various other forms of art depicting the use or worship of the sun. Later on, the most celebrated Arabian physician, Avicenna (980-1037) recommended sun baths. John of Gaddesden (1280-1361) first used light about 1307, in the treatment of smallpox. Walter Harris in 1742 noted that clam shells, when ground up in the sun and used in treatment, cured or improved certain diseases we know now as lacking in calcium metabolism. Thus, two hundred years ago began the use of irradiated foods. Early in the nineteenth century, Ollier and Poncet wrote on the sun treatment of tubercular arthritis. In 1676, Roemer (1644-1710) discovered the velocity of light. In 1777 Karl Wilhelm Scheele (1742-1786) discovered rays which darkened silver chlorid. The German physician, Christopher Wilhelm Hufeland (1762-1836) recommended sunlight in scrofula. In 1801, Ritter discovered the ultra-violet rays. In the same year Sir Humphrey Davy (1778-1829) demonstrated the first carbon arc light. Isaac Newton (1642-1727) in 1666, by prisms, pointed out the various divisions of the visible spectrum. Theobald Palm in the late eighties spoke of rickets as "the shadow disease." Loebel, in 1815, designed a sun-bath cabinet. In 1857, Jean Martin Charcot (1825-1893) stated that sunburn was due to invisible rays of the sun, and in 1885 Unna proved them to be such. In 1814, J. von Fraunhofer (1787-1826) discovered the dark lines of the spectrum. William Herschel (1738-1822) revealed the infra-red rays. In 1897, Finsen (1860-1904) established his light institution. For the treatment of scrofula, Lugol (1788-1851) considered light essential. This was before the tubercular etiology was known. I can only mention famous characters in this early history

such as Thomas Beddoes (1760-1808), Johann Wolfgang Dobereiner (1780-1849), and Bonnet (1802-1858). In 1889, Widmark proved ultra-violet rays caused erythema and pigmentation. Finsen was the first to establish, let alone to suggest, that all rays of the sun were not equally of value in treatment; he was certain that the ultra-violet rays were the most effective. In 1895, he started using sunlight for the treatment of lupus; he invented and constructed the first water-cooled ultra-violet machine thirty-seven years ago. Bie, with Finsen, showed that the bacteriological properties of light lay in the blue and ultra-violet rays. Finsen was the originator of artificial light in therapy, using the carbon arc and receiving the Nobel prize. Forty years before, however, one Arnold Rickli of Austria established a clinic and used the sunbath for treatment. In the eighteenth century, Hewitt patented a lamp with a mercury vapor arc, after Arons in 1892 had developed and evaluated the same type of lamp with the mercury arc through a vacuum. The open-air treatment of disease existed in Scotland in 1747. There was a seashore hospital at Margate in 1791. George Bodington (1799-1882) in 1840 anticipated modern views in the use of cold dry air in lung diseases. The first open-air sanitarium for tubercular patients was established in Waldenburg mountains by Brehmer in 1859. It still exists. Our own Trudeau was a pioneer in this field in this country, and Bernhard and Rollier in Switzerland. So much for the sun, "the Giver of Life."

HYDROTHERAPY, MASSAGE, AND EXERCISE

Turning now to hydrotherapy, massage, and exercise, we are confronted with volumes of historical knowledge and use. Hydrotherapy probably began with the licking of wounds by animals. In ancient records we find that the Hebrews attained the highest eminence among oriental peoples in hygiene and hydrotherapy; they may be said to have originated public hygiene. In the medieval medicine of Japan, when disease was said to be caused by divine influence or devils, there were two deities who presided over healing, and one of their chief forms of therapy was mineral baths. Massage was so predominant and useful that it was considered the duty of the blind to learn it as an occupation. A thousand years before Christ, medical men, quite apart from the priests, practiced gymnastics, bathing and anointing. Osler has said that Greek medicine had a triple relationship with science, gymnastics, and theology. Hydrotherapy was so successful that Thales of Miletus (639-546 B. C.) taught that water is the primary element from which all else is derived. Hippocrates, as we know, felt that open air, massage, and hydrotherapy were foundations of treatment. Asclepiades depended upon light, hydrotherapy, and massage. He introduced general water therapy, and no less than eighteen hundred public baths had been founded during the period 334 B. C. to 180 A. D. The baths of Caracalla and Diocletian had marvelous accommodations for 1600 to 3,000 persons. In realizing

as much as that of the barber-surgeons. The fact that the Roman baths existed over two thousand years ago, we must pay tribute to their remarkable achievement and architecture. There were hot rooms, warm rooms, exercise rooms, swimming tanks, and a cold room actually called then the "Frigidarium." The large baths admitted plenty of light and air to the bathing rooms. The Romans knew enough of the value of sunlight to have the bathing rooms built with one whole side or the roof capable of being opened. Profuse perspiration was induced in the hot rooms. Bathing, exercise, and massage was a part of the Roman's daily routine. Even in the farmhouses the air or sunroom (atrium) was retained.

You have heard of the famous ship of Aesculapius, built by Romans about 293 B. C. in the middle of the Tiber, where they fled during a pestilence. There a great temple was erected to their God of Medicine, and this now forms one of the most interesting ruins of Rome. The island was cut in the form of a huge ship, 900 feet long and 240 feet wide, perfect in every detail, even to a huge mast. There was a central temple, with smaller ones around it, where medicinal baths, massage, and exercise could be applied. Springs were so venerated in their efficacy that they were considered as holy. Vitruvius in 46 B. C. wrote some remarkable medical treatises.

In the medieval period the general practice of surgery was still in the hands of the bathkeepers, ablest Italian surgeon of the thirteenth century, Saliceto (1210-1277), specified wet compresses in skull injuries to prevent the admission of foul air. The early medical schools of Salerno and Montpellier had enormous bathing departments. In 1872, Mercuriali (1530-1606) wrote a famous treatise on medical gymnastics, which was illustrated. Homer refers to warm baths for fatigue and injuries. The first ancient public baths were probably established by the Lacedemonians, who were given the credit of having invented the hot air bath. Hippocrates attached great importance to water therapy, and in 460 B. C. employed it with friction and rubbing for the treatment of muscle spasm and disease of the joints. He recommended physical therapy in gout, pneumonia and rheumatism. Galen gave first place to water in the treatment of disease. The Romans practiced bathing in the Tiber after exercise, and their emperors vied with one another in constructing gymnasia and baths, known as "thermae." The chief ones were at Agrippa 21 B. C., Nero 65, Titus 81, Domitian 95, Commodus 185, Caracalla 217, Diocletian 302 A. D., and Constantine. The Ganges and the Nile are frequently referred to as the bathing places of ancient men. The bathing establishments of the Persians were handsomely equipped. In 525 A. D., Alexander of Tralles recommended the use of water. In 923, Rhazes and in 1036, Avicenna, two Arabian physicians, advocated the use of cold water in fevers and diarrhea. The Japanese used it in the treatment of mania, convulsions, and hysteria. In 1576, Paracelsus wrote on mineral baths. In 1555, Cardano wrote on the uses of water. In England in

1696 and 1702, Sir John Floyer and Dr. Baynard wrote "The History of Cold Bathing." It ran through six editions and was translated into German. In 1723, Niccolo Lanzini published "Right Methods of Using Cold Water in Fevers." In 1738, Hahn wrote "The Power and Effect of Cold Water," and the Hahn family were all prominent in this field. In 1753, V. Perez published a work on hydrotherapy. In 1761, F. Hoffman of England published an article on "The Nature and Properties of Water." In 1776, Wright published in the *London Medical Journal* his experiments with cold water and fevers. In 1829, in Grafenburg, the celebrated Priessnitz established a cold water cure, so successfully that the Austrian Government lent its patronage. In 1874, Schuller published his observations of thermic applications on the circulation. In 1892, Vinaj confirmed these observations; they laid the foundations for our present knowledge of the effects of cutaneous thermic applications upon the visceral circulation. In 1848, Fleury of France published his work describing the invention and use of the douche. In 1760, Tissot (1728-1797) recommended the cold bath in fever. In 1861, Brand of Stettin published the amazing results of his bath in the treatment of typhoid fever. The late Doctor Winternitz (1835-1917) of Vienna was probably the father of rational physical therapy and wrote on the central nervous and circulatory systems. In 1897, Doctor Currie published his findings in the use of water in fevers, and of salt water in typhoid. In 1804, Oertel advised water drinking, and with Priessnitz popularized hydrotherapy. In 1860, Jurgensen of Kiel stressed this important form of therapy. In 1870, Liebermeister employed cold water in typhoid, with striking results. The Bavarian pastor, Kneipp, furthered greatly rational hydrotherapy. The first in this country to do much in that field was Russell Trall (1844). Ernest Brand (1827-1897) used cold water in typhoid, and in the nineties the great Winternitz created a school of clinical hydrotherapy. All this was many years after Homer spoke of Penelope's use of the bath to allay the melancholy of her husband's absence, when Hercules was refreshed by Minerva at the springs of Thermopylae, when Ulysses advised his father to have warm baths in his old age, and Oribasius developed the theory of hydrotherapy. Let us not forget Plato and his use of water in various diseases, and also Aretaeus, who applied sulphur baths in skin lesions and was the first to advise keeping the head out of the steam bath. And last but not least, Galen, Celsus and Paulus of Aegina, who used baths in fevers and the Spartans who bathed by law. The history of Japanese medicine reveals their use for nearly a thousand years, and Nakagami published a treatise on the subject over three hundred years ago.

Attempts were made with the insane even in the eighteenth century in the field of hydrotherapy. Many such affected were sent to the mineral baths in Meyenberg and Pyrmont. In Germany, the barber was often a bath keeper (balneator); and perhaps no other country has been so famous for

her resorts of hydrotherapy even in modern times. In our own country it is interesting to note that Samuel Thomson (1769-1843) of New Hampshire, received a patent on January 23, 1823, on the use of steam to produce perspiration. In 1801, Dr. James Thacher of Plymouth wrote that massage and hydrotherapy were too much neglected. Oliver Wendell Holmes, surgeon and poet, lauded physical therapy in 1859, as did Doctor Garratt of Boston in 1867.

In the brief consideration of massage and exercise, our earliest record again is the ancient Chinese "Kong Fao," wherein the Chinese employed rubbing as a therapy measure. Aesculapius might be called the inventor of it, in disease. Herodikus in 500 B. C. used it systematically. Massage in German medicine was so valuable that shepherds, herdsmen, and smiths became renowned as masseurs. Metzger of Wiesbaden originally rated massage as a branch of therapy, using the stroking, rubbing, kneading and beating, and instituting the first intelligent and methodical use of massage. In the sixteenth century, Fabricius used physical therapy in stiff joints, and today we recognize this as essential in personal and public hygiene, as well as in preventive medicine.

EXERCISE

In the consideration of exercise or gymnastics, our first knowledge is of Herodikus of Selymbria (about 500 B. C.), who was the father of exercise and mechanotherapy. Hippocrates was also its advocate. Erasistratus (300-225 B. C.) wrote on gymnastics. He was followed by Asclepiades (about 100 B. C.), by Celsus, Thessalus (60 A. D.), Galen (130-200), Antyllus (550) Paul of Aegina (625-690), Rhazes (860-932), and Avicenna (980-1037), all of whom lived before the tenth century and wrote extensively on the value of gymnastics.

In 1569, Geronima Mercurialis wrote "De Arte Gymnastica," the best known work in the gymnastics of the ancients. He was followed by Timothy Bright, then by Thomas Sydenham (1624-1689), who wrote of the virtues of exercise. The father of our present rocking-horse was Quellmaltz (1735). A vibrating chair was used by Voltaire, while Chirac rode in a carriage on cobblestones. In 1704, Tissot published his "Gymnastic Medicinale." The first orthopedic book was published by Nicholas Andry (1741). In 1704, Hoffman wrote that exercise was the best medicine for the body. The teachings of John Hunter form the basis of our present methods of muscle training. Peter Henrik Ling (1776-1839) put exercise and massage on a scientific basis, but Jacques Matthieu Delpech was the first to use gymnastics to treat human deformities. John Shaw (1792-1828) introduced athletic exercises into surgery, and Zander (1857) devised the machine therapy for muscle groups.

HEAT

The subject of heat has, of course, been covered mostly in our discussions of exposure to the sun, the warmth of baths and of steam; but I must

make mention of the interesting use of colored light, particularly red. The ancient Japanese used red hangings to reflect red light and its heat upon smallpox patients. In the light of modern science we know that an increase of blood supply to the skin by infra-red heat means increased drainage. This, in turn, does much to lessen the inflammation present in the pustules of smallpox and might well lessen the scars. The red light used by Finsen to prevent pitting in smallpox, therefore, was just the continuance of ancient folklore. Anglicus, Bernard, De Gordon, and John of Gadesden had employed it successfully in the case of the son of Edward the Second of England. Edward the First was treated thus, being covered with scarlet blankets and red counterpane. In the reign of Queen Elizabeth, red curtains and red glasses about smallpox patients were prevalent. Children were clothed with scarlet curtains in the eighteenth century in France and Japan. An old Roumanian custom from time immemorial has been to cover smallpox patients with red cloths. In Tonkin, the patient was placed in an alcove. Svendsen proved that light could change a vesicle of smallpox into a pustule.

The advocates of dry heat were few in comparison to the advocates of moist heat. In 1840, Guyot published a treatise on hot air and heat for pain. In 1844, Chautard published an article on the use of dry heat in rheumatism, and in 1893, Tellerman on the use of dry heat in pain. Now when we mention the cautery, we think of electricity; but not so in the olden days, when it was burning by a hot iron. Early use was made of this means by Avicenna (980-1037), the celebrated Arabian already mentioned, physician-in-chief to the hospital of Bagdad who, in his "Canon Medicinæ," insisted upon the substitution of the cautery for the knife. Albucasis of Cordova, another Arabian physician, flourished in the eleventh century and was the author of a notable résumé called the "Al-Tasrif." One whole volume deals with the use of the actual cautery, the special feature of Arabian surgery, and gives descriptions and figurations of the peculiar instruments used. In Germany, Brunschwig, in 1497, used the actual cautery to check hemorrhage in amputations. The name of the French surgeon, Ambroise Paré (1517-1590), is already familiar for his famous statement that "diseases not curable by irons are curable by fire," and his use of the cautery on the battlefield is well known. It is interesting to note, too, that he also introduced massage into orthopedic surgery. Guy de Chaliac (1300-1368) employed the actual cautery in the fungus variety or lesions, as well as in caries, anthrax, and others.

ELECTRICITY

And so the history of modern medicine evolves merely into the history of man, bringing us, last of all, to speak of electricity. You were probably aware of the early history of the subjects I have mentioned, but perhaps there is not in your minds a true realization of the age of electricity and its use upon humans. Probably the first realization of

electricity came in the use of the amber bead as a clutcher on the spindle of Phoenician women: the very term, you know, comes from the Greek "elektron," the word for amber. Centuries ago the women of Africa bathed their sick children in waters frequented by the electric eel and torpedo, and in the reign of Tiberius electricity was employed by Scribonius Largus in the treatment of gout and headache by means of the torpedo fish. Pliny and Dioscorides refer to the remedial powers of electricity. In 1772, John Walsh described electricity in the cartilaginous torpedo. About 600 B. C., Thales of Greece, chief of the seven sages, rubbed a piece of fossil resin and observed that the amber attracted bits of cloth and feathers. In the time of Emperor Tiberius a freedman stepped on a torpedo fish and was freed of gout; this treatment was then recommended by Dioscorides for headache, as well as by Galen and Paul of Aegina (625-690). Aetius (450) employed a magnet for gout, and Paracelsus (1493-1541) maintained that magnets had powers of therapy. William Gilbert (1540-1603) published in 1600, "De Magnete," and Gilbert, a physician to Queen Elizabeth, can be called the father of clinical electricity; but Krueger (1715-1759) first used it as a curative agent in 1744. In 1621, Van Helmont (1557-1624) published "De Magnetica." In 1660, Von Guericke (1602-1686) constructed the first primitive static machine, and in 1709 Hanksbee improved it. Our own Benjamin Franklin (1706-1790) in 1749 established the electrical origin of lightning and used Leyden jars in the treatment of disease; while in 1753 Richman was killed repeating the kite experiment. In 1745, Krantzenstein (1723-1795) first used Leyden jars in Europe in treating disease, curing within a quarter of an hour a woman with a contracted finger. Jallabert was the first to produce muscle contraction by sparks (1712-1768), and in 1792 the famed Luigi Galvani (1737-1798) of Bologna discovered the electrical property of excised tissues of the frog, which was the starting point of modern work.

Following him, with great insight, was Alessandro Volta (1745-1827), professor at Pavia. His "Letters on Animal Electricity" gave us our first conception of electrolysis and the demonstration of tetanic contraction by successive electric stimulæ. The static spark was first used in 1734, by Abbé Nollett.

The first static machine in London was installed in the Middlesex Hospital in 1767, St. Bartholomew's in 1777, and St. Thomas' in 1799; and an old print of that date hangs in St. Bartholomew's electrical department now, showing the administration of static electricity to a patient. Doctor Bird in 1836 became the first head of a hospital electrical department in England. The famous Purkinje (1787-1869) was a pioneer in galvanic stimulation. The German physiologist, E. H. Weber (1795-1878), discovered the action of the vagus nerve by electromagnetic currents. His brother, W. E. Weber (1804-1891), constructed one of the first electromagnetic telegraphs and used electricity in muscle movement. The famous

religious reformer, John Wesley (1703-1791), in the 1760 edition of his book, "The Desideratum," on the treatment of disease, introduced electricity and stated: "It comes nearest a universal medicine of any yet known to the world." Thomas Addison (1793-1860) was the first to employ, in 1837, static electricity in the treatment of spasmodic and convulsive disease. In 1825, direct current was used in Europe. Our own S. Wier Mitchell used faradic current in striated muscle.

Michael Faraday (1791-1867), English physicist and chemist, wrote 158 scientific papers and one textbook, and his discoveries in electricity were many, particularly in magnetic induction. In 1767, the English clergyman and natural philosopher, Joseph Priestley (1733-1804) published his "History of Electricity." In 1773, the British surgeon, John Hunter (1728-1793) made known his observations on the torpedo; in 1793, Volta designed the first battery. In 1783, Marat put out a book on electricity and therapy. In 1825, Georg Simon Ohm (1787-1854) propounded his "Ohm's Law," and in 1841, Jonle (1818-1889) published his studies on electrolysis. In 1842, Reymond (1818-1896) became the founder of modern electrophysiology: he introduced, in 1849, faradic stimulation from a special induction coil, and was the first to describe and define electrotetanus—a truly great man.

In 1855, Duchesne (1806-1875) classified electrophysiology. He was the founder of electrotherapy and he employed induced current in the treatment of paralysis. Remak (1815-1865) substituted galvanic for the faradic current, and in 1855 demonstrated points of muscle stimulation on the human. Von Ziemssen (1829-1902) charted these motor points in 1857. Althouse (1831-1900) of London, in 1867 published the first systematic work on electrolysis; and in 1866 he removed a nevus. Michel, in 1875, removed hair by this method. In 1891, Tesla first suggested diathermy use, and in 1892 D'Arsonval introduced high-frequency currents, describing their action, while in 1893 Oudin demonstrated fulguration.

Carlo Matteucci (1811-1868) introduced the word "tetanize" in 1838, and first demonstrated that the muscle of a muscle-nerve preparation will contract if its nerve be laid across another contracting muscle. Adolf Fick (1829-1901) wrote two important works on medical physics and invented several new instruments. Hugo Kronecker (1839-1914), as long ago as 1871, distinguished himself for his physiology of muscle work with the use of electricity.

Erb suggested the method of electrodiagnosis by galvanic and induction currents, and followed Duchesne in the extensive development of electrotherapy. S. Wier Mitchell, one of the greatest neurologists of his time, introduced the use of electricity in the treatment of nervous disorders, combining it with rest, massage, and fresh air. Nicola Tesla first suggested the medical use of that form of electricity now known as high-frequency; Nagleschmidt gave it the name "diathermy," and Doyen first used it in surgery.